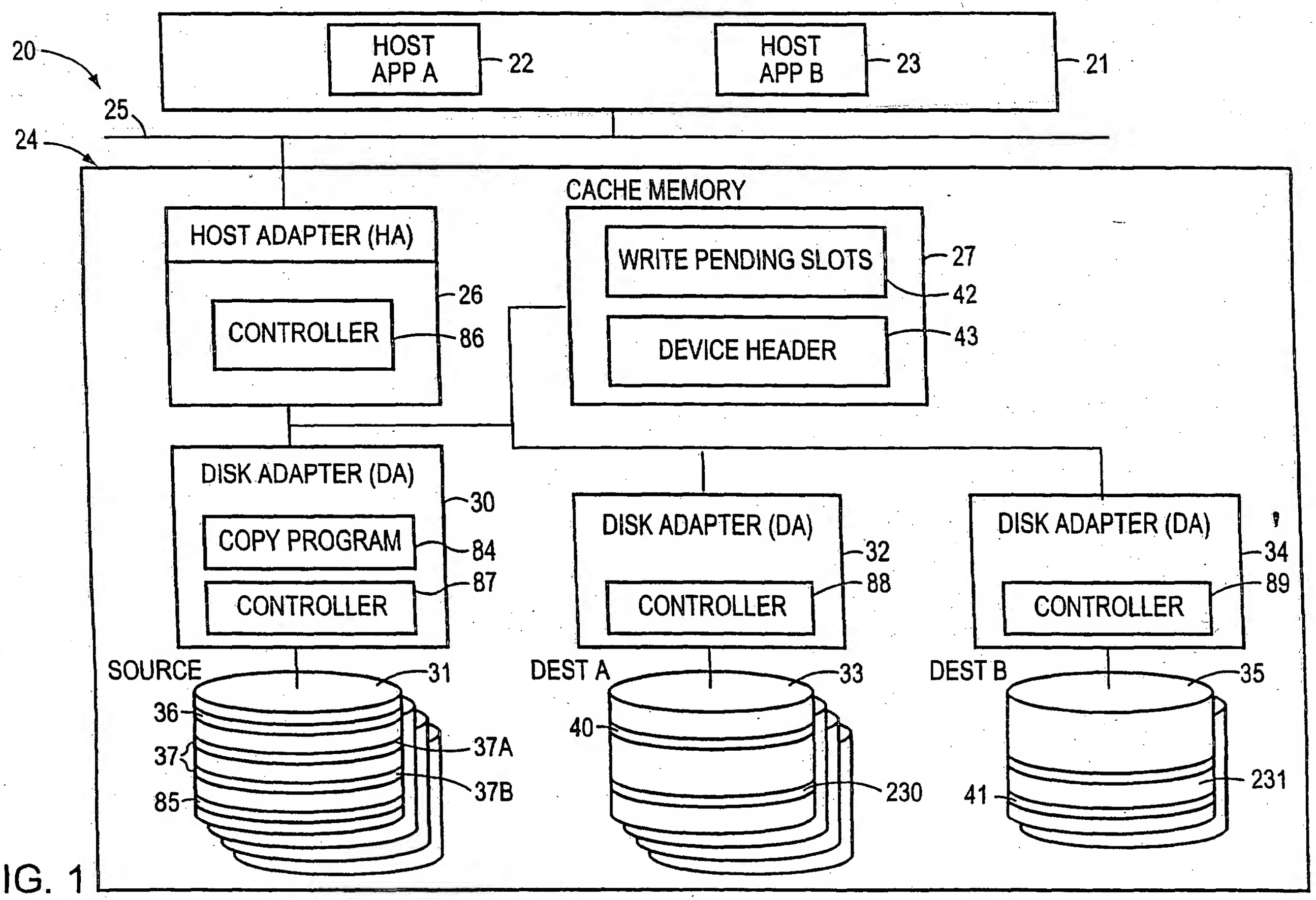
20
25
24
HOST APP A
22
HOST APP B
23
21
CACHE MEMORY
HOST ADAPTER (HA)
26
CONTROLLER
86
WRITE PENDING SLOTS
27
42
DEVICE HEADER
43
DISK ADAPTER (DA)
30
COPY PROGRAM
84
CONTROLLER
87
DISK ADAPTER (DA)
32
CONTROLLER
88
DISK ADAPTER (DA)
34
CONTROLLER
89
SOURCE
31
36
37
85
37A
37B
DEST A
33
40
230
DEST B
35
41
231

FIG. 1

1/12

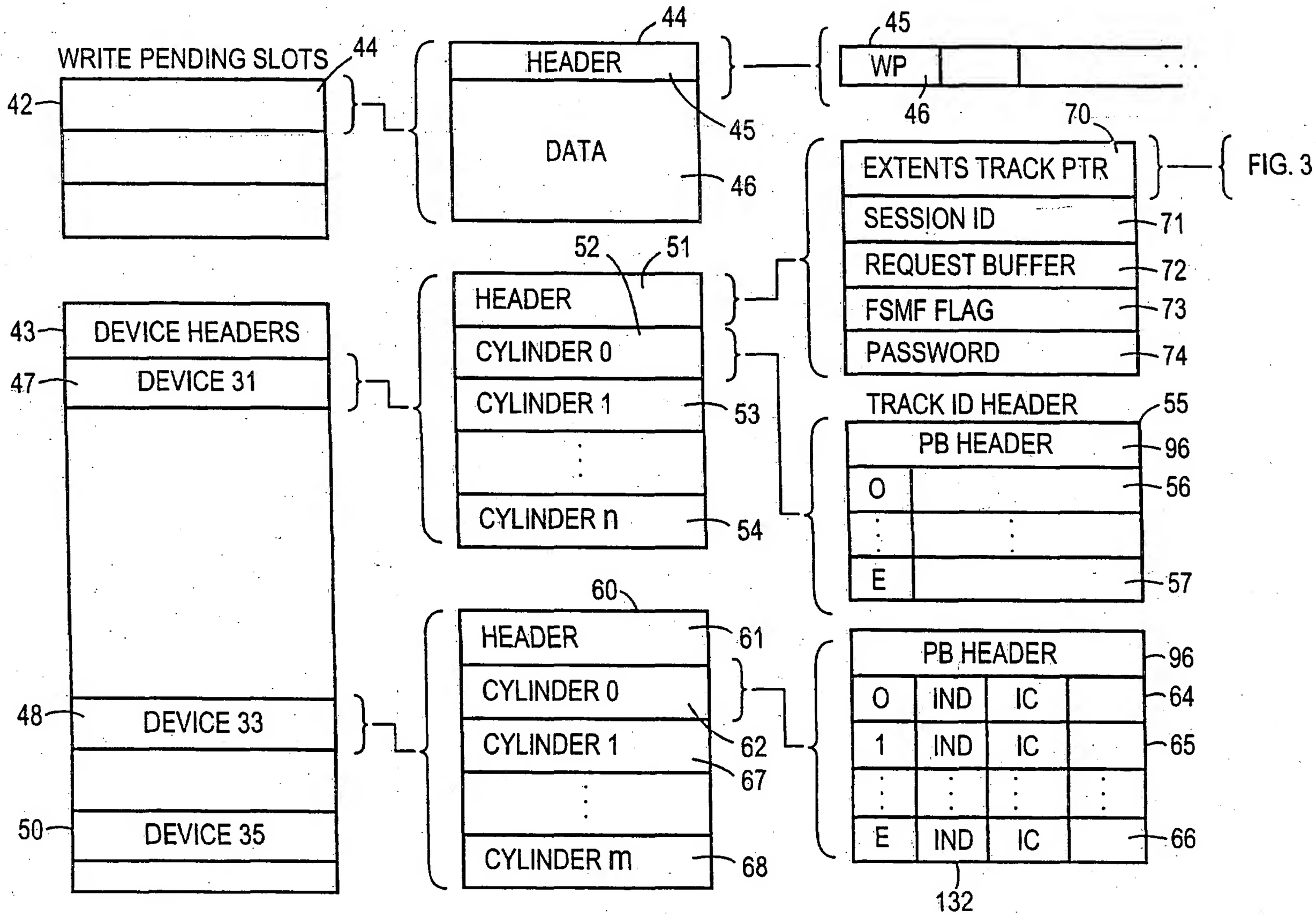
WRITE PENDING SLOTS
42
44
HEADER
DATA
45
46
WP
45
46
70
EXTENTS TRACK PTR
SESSION ID
71
REQUEST BUFFER
72
FSMF FLAG
73
PASSWORD
74
FIG. 3
43
DEVICE HEADERS
47
DEVICE 31
52
51
HEADER
CYLINDER 0
CYLINDER 1
53
CYLINDER n
54
TRACK ID HEADER
55
PB HEADER
96
O
56
E
57
48
DEVICE 33
50
DEVICE 35
60
HEADER
61
CYLINDER 0
62
CYLINDER 1
67
CYLINDER m
68
PB HEADER
96
O
IND
IC
64
1
IND
IC
65
E
IND
IC
66
132

FIG. 2

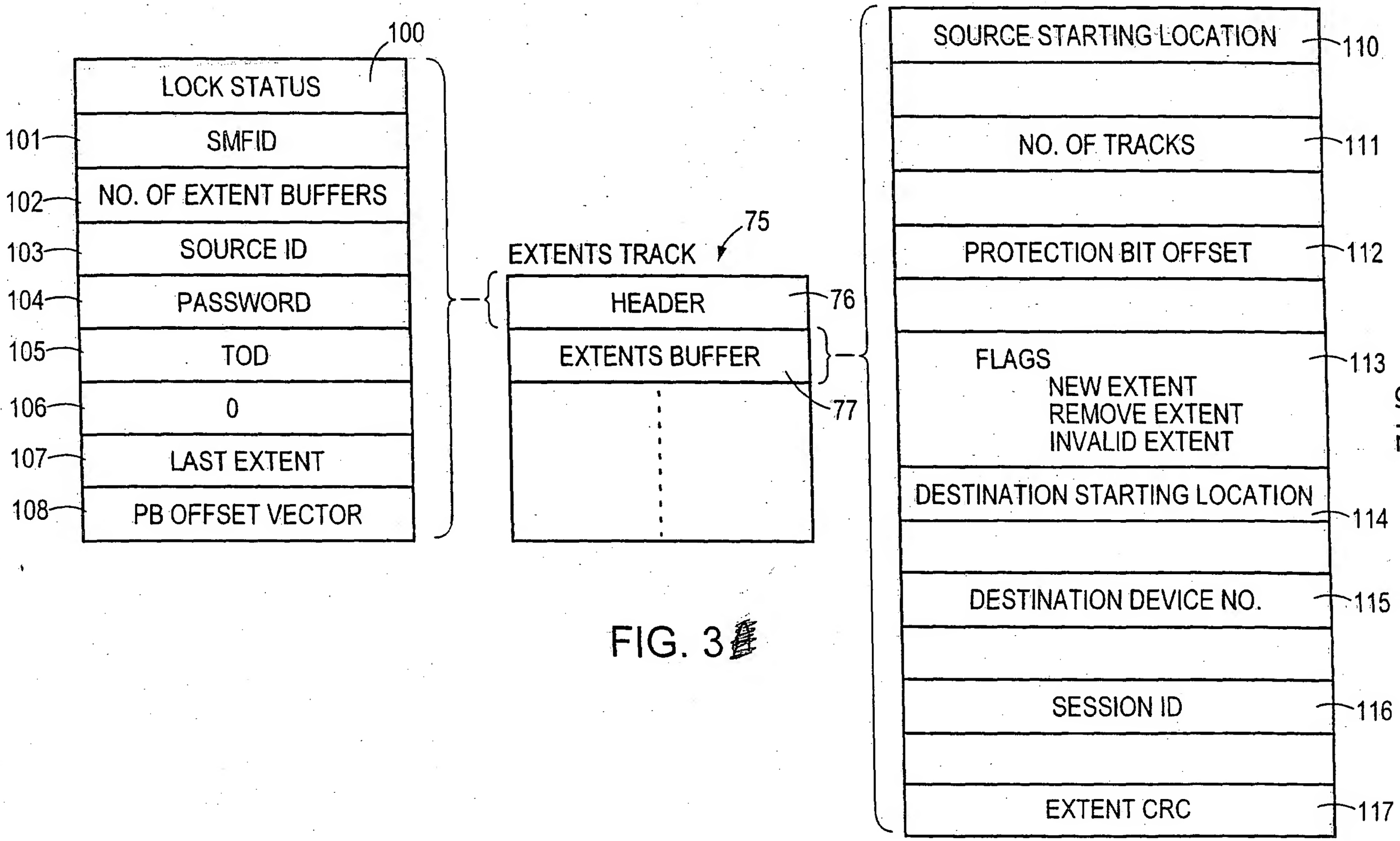
100
LOCK STATUS
101
SMFID
102
NO. OF EXTENT BUFFERS
103
SOURCE ID
104
PASSWORD
105
TOD
106
0
107
LAST EXTENT
108
PB OFFSET VECTOR
75
EXTENTS TRACK
HEADER
76
EXTENTS BUFFER
77
SOURCE STARTING LOCATION
110
NO. OF TRACKS
111
PROTECTION BIT OFFSET
112
FLAGS
NEW EXTENT
REMOVE EXTENT
INVALID EXTENT
113
DESTINATION STARTING LOCATION
114
DESTINATION DEVICE NO.
115
SESSION ID
116
EXTENT CRC
117

FIG. 3

	CALL FROM DESTINATION DEVICE	CALL FROM SOURCE DEVICE
81	SOURCE DEVICE NUMBER	DESTINATION DEVICE NUMBER
82	RECORD NUMBER OF STARTING EXTENT	CYLINDER ADDRESS OF DESTINATION DEVICE
83	RECORD NUMBER OF ENDING EXTENT	HEAD IDENTIFIER OF DESTINATION DEVICE

FIG. 4

REQUESTING HOST APPLICATION

DATA STORAGE FACILITY 24

306

NO

EXTENT?

YES

91

ALLOCATE TRACK TO BECOME AN EXTENTS TRACK (E.G., THE EXTENT TRACK 85)

92

ALLOCATE THE EXTENTS TRACK 85; GENERATE A POINTER TO THE EXTENTS TRACK 85

93

PLACE THE POINTER IN THE SOURCE DEVICE HEADER STRUCTURE (E.G., THE POINTER 70 INTO THE HEADER STRUCTURE 55)

94

CREATE A SESSION ID

307

EXTENT?

YES

NO

310

ESTABLISH A DATA STRUCTURE FOR AN OPEN SYSTEM (FIG. 13)

311

EXTENT?

YES

312

NO

ISSUE A SYSTEM CALL

95

ESTABLISH THE SESSION ID AND ASSIGN A PB COLUMN POSITION FOR THE SESSION

ESTABLISH AN EXTENT:
READ THE EXTENTS TRACK 85
ADD ANY NEW EXTENTS
REMOVE INVALID EXTENTS
RESPORT THE EXTENTS LIST
BUILD THE EXTENTS TRACK
WRITE THE EXTENTS TRACK
ISSUE AN EXTENTS SYSTEM CALL

97

121

HOST ADAPTER AND DEVICE ADAPATER RESPOND (FIG. 6) (E.G., HOST ADAPTER 25 AND DESTINATION DEVICE ADAPTER 30)

120

WAIT FOR RESPONSE

RECEIVE STATUS AND CONTINUE APPLICATION

122

FIG. 5

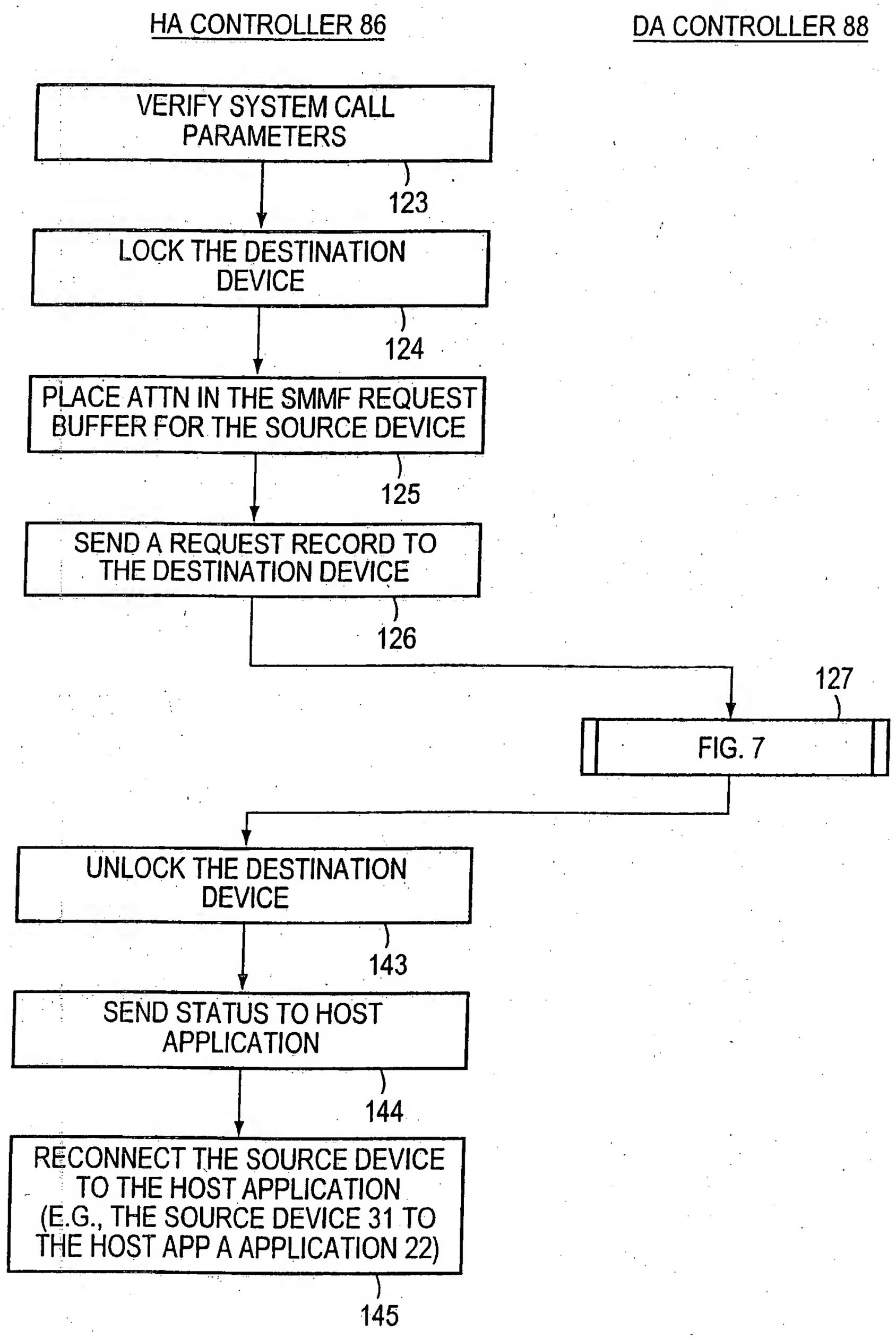
HA CONTROLLER 86
DA CONTROLLER 88
VERIFY SYSTEM CALL PARAMETERS
123
LOCK THE DESTINATION DEVICE
124
PLACE ATTN IN THE SMMF REQUEST BUFFER FOR THE SOURCE DEVICE
125
SEND A REQUEST RECORD TO THE DESTINATION DEVICE
126
127
FIG. 7
UNLOCK THE DESTINATION DEVICE
143
SEND STATUS TO HOST APPLICATION
144
RECONNECT THE SOURCE DEVICE TO THE HOST APPLICATION (E.G., THE SOURCE DEVICE 31 TO THE HOST APP A APPLICATION 22)
145

FIG. 6

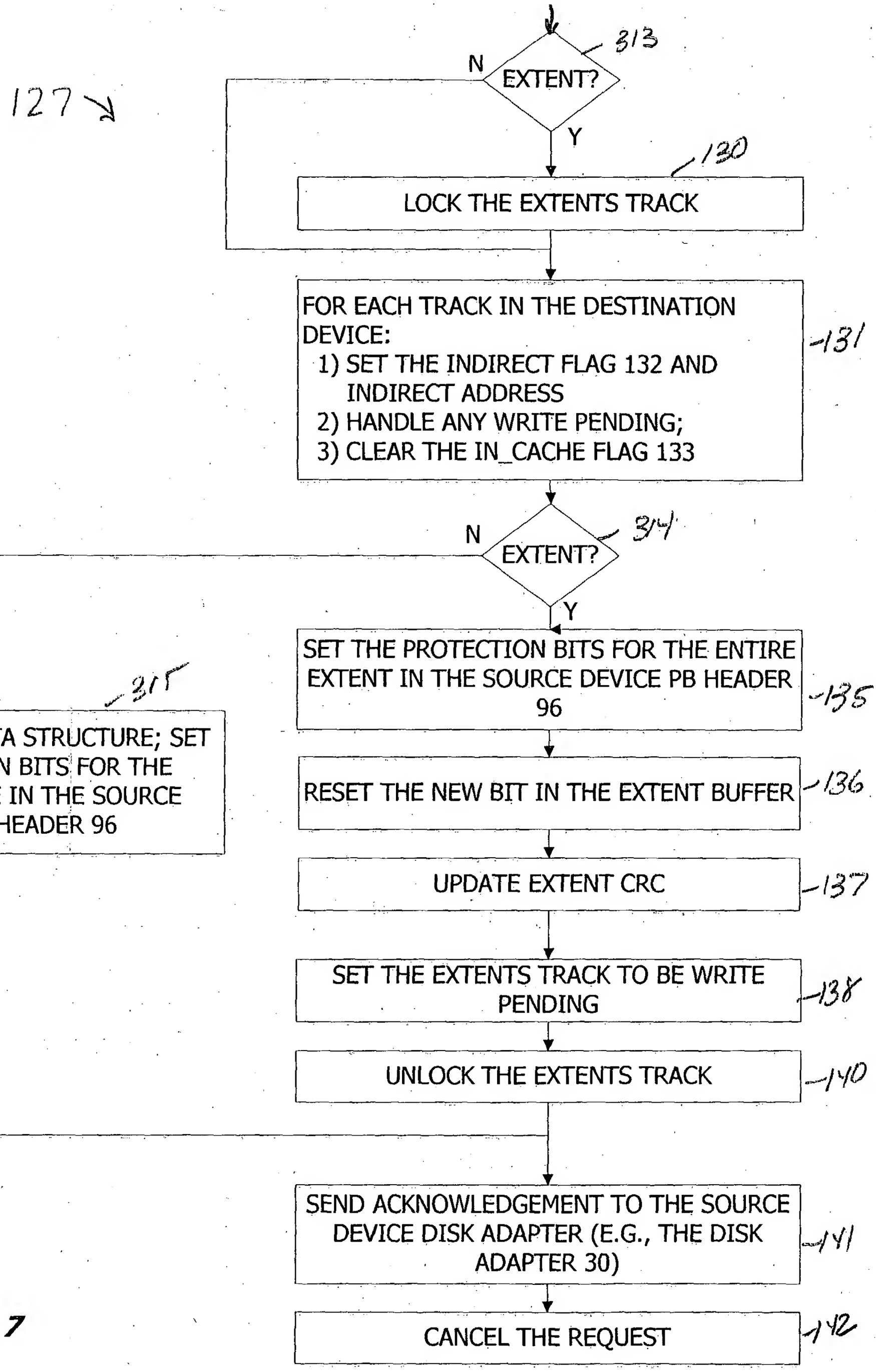
127
313
N
EXTENT?
Y
130
LOCK THE EXTENTS TRACK
FOR EACH TRACK IN THE DESTINATION DEVICE:
1) SET THE INDIRECT FLAG 132 AND INDIRECT ADDRESS
2) HANDLE ANY WRITE PENDING;
3) CLEAR THE IN_CACHE FLAG 133
131
N
EXTENT?
Y
134
315
TIALIZE THE DATA STRUCTURE; SET THE PROTECTION BITS FOR THE OGICAL VOLUME IN THE SOURCE DEVICE PB HEADER 96
SET THE PROTECTION BITS FOR THE ENTIRE EXTENT IN THE SOURCE DEVICE PB HEADER 96
135
RESET THE NEW BIT IN THE EXTENT BUFFER
136
UPDATE EXTENT CRC
137
SET THE EXTENTS TRACK TO BE WRITE PENDING
138
UNLOCK THE EXTENTS TRACK
140
SEND ACKNOWLEDGEMENT TO THE SOURCE DEVICE DISK ADAPTER (E.G., THE DISK ADAPTER 30)
141
CANCEL THE REQUEST
142

FIG. 7

COPY PROGRAM

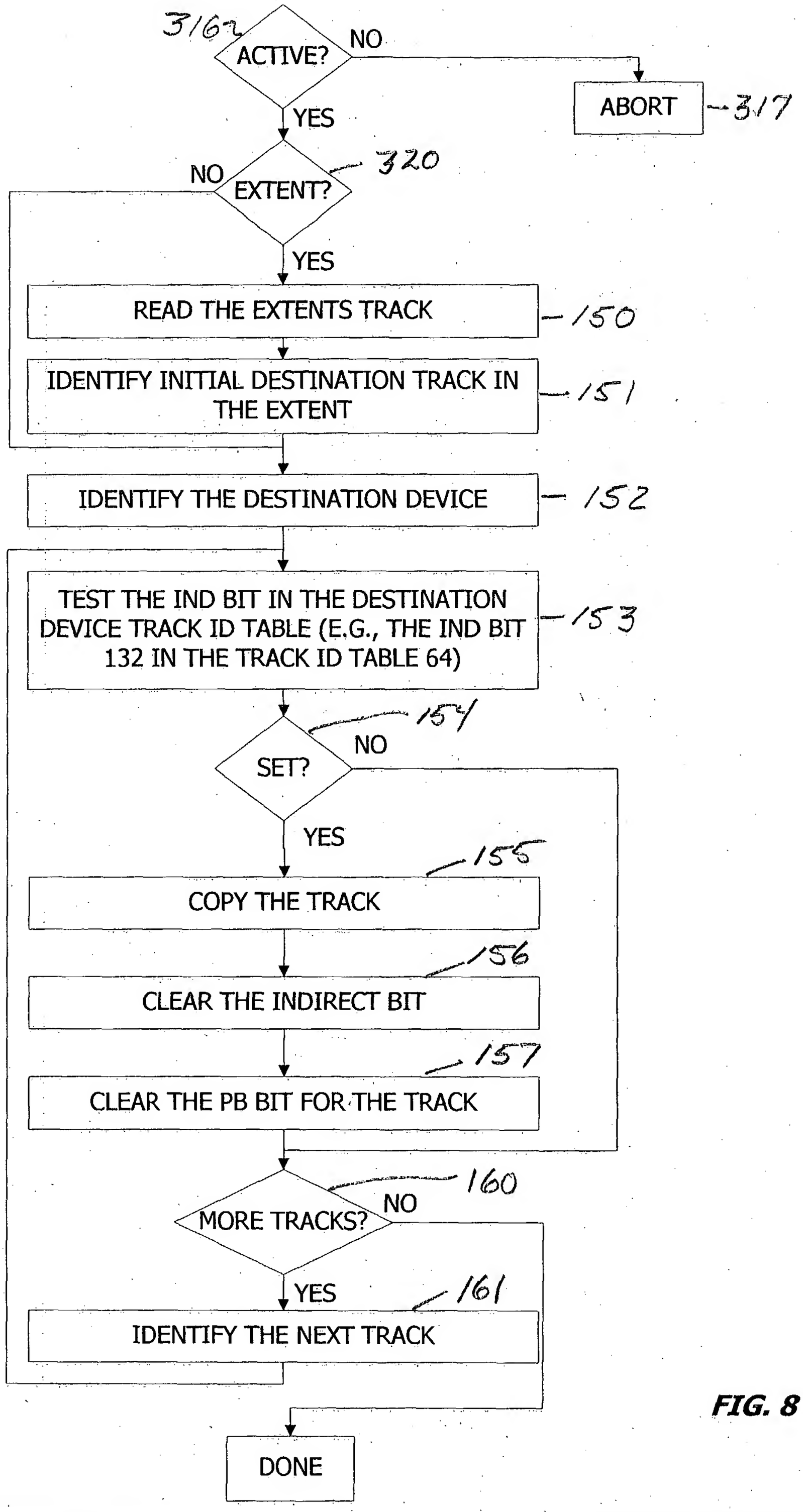

FIG. 8

WRITE
OPERATION
OM SOURCE
HOST

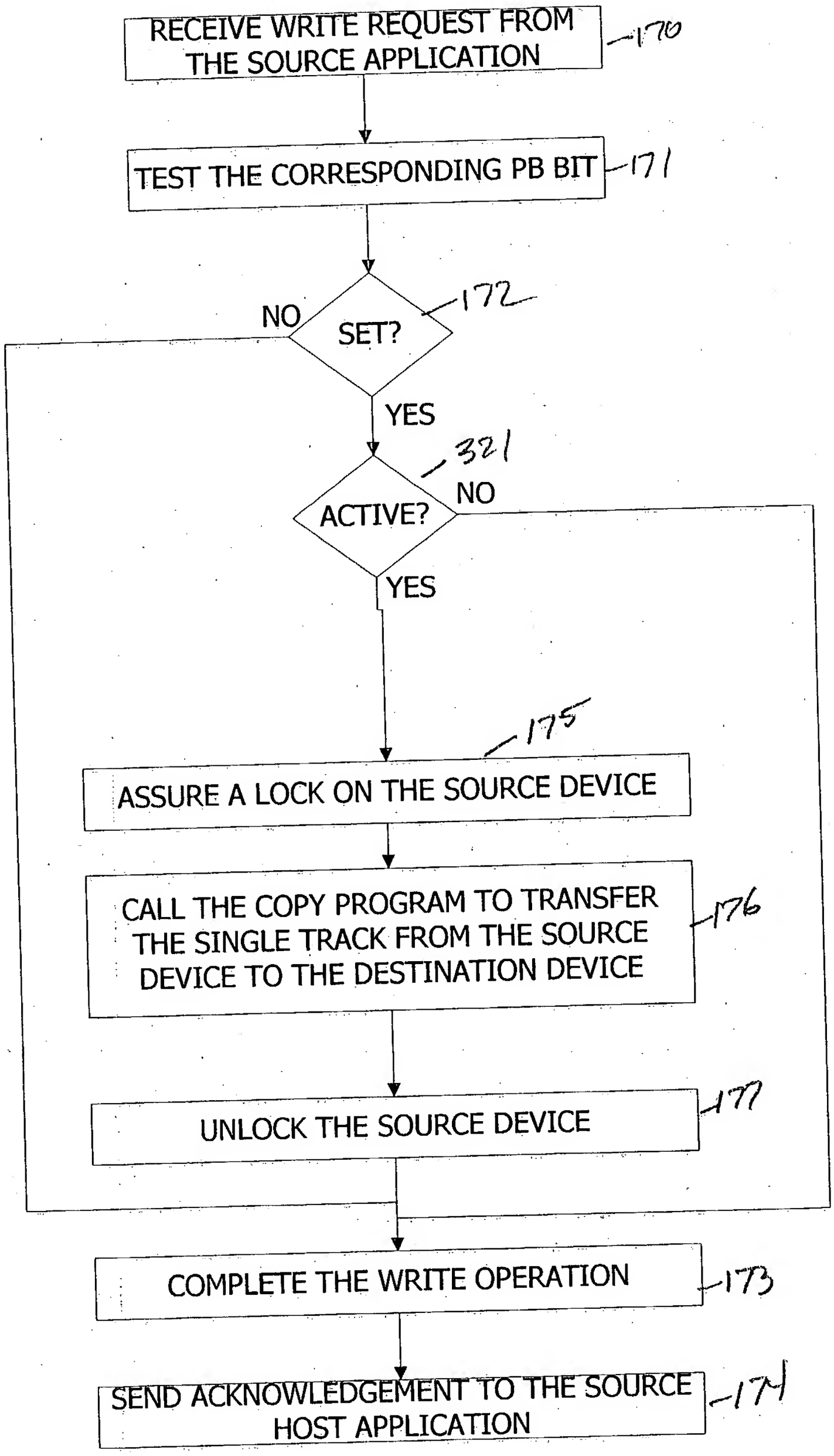

FIG. 9

READ OR WRITE OPERATION FROM DESTINATION HOST

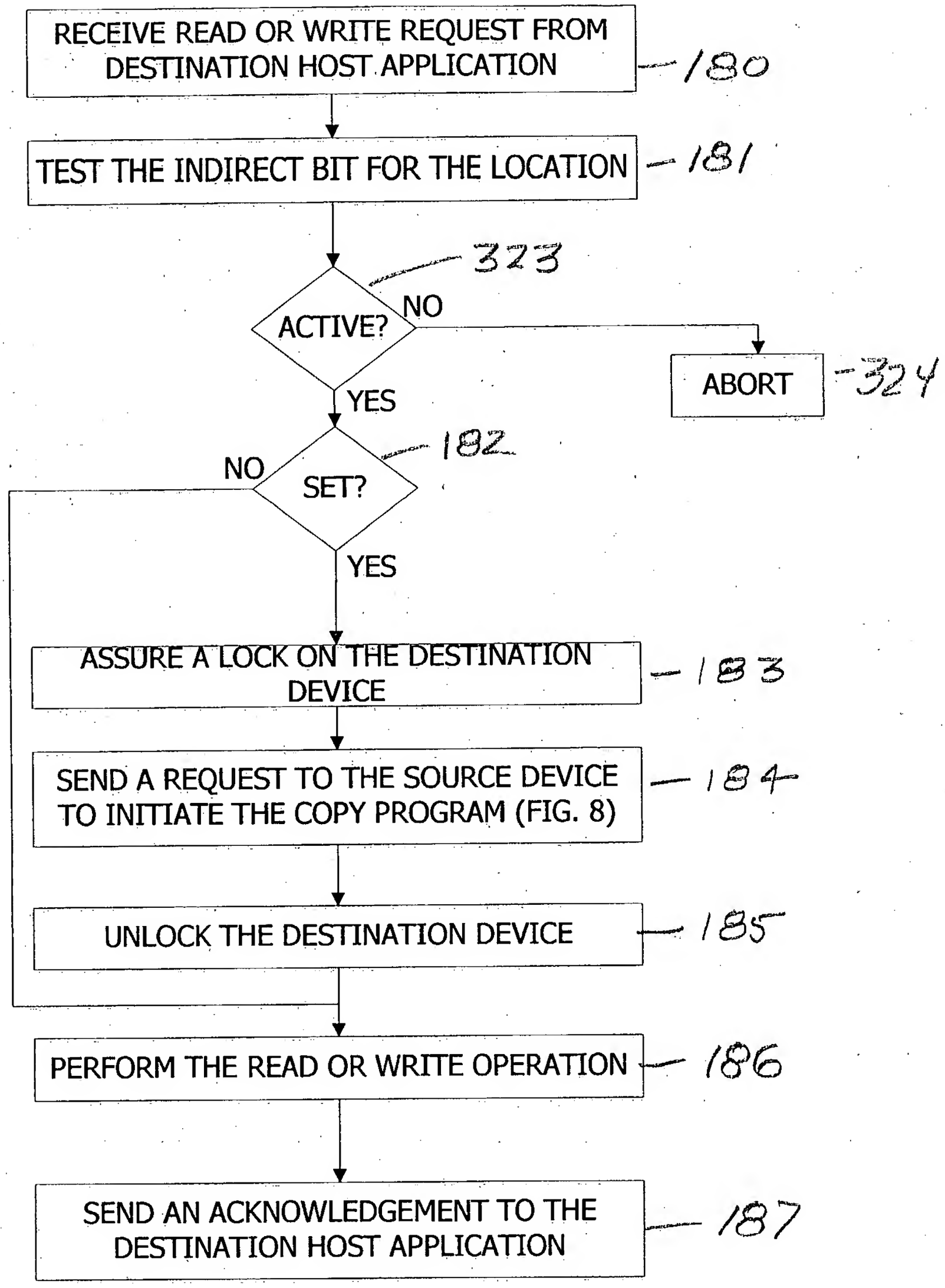

FIG. 10

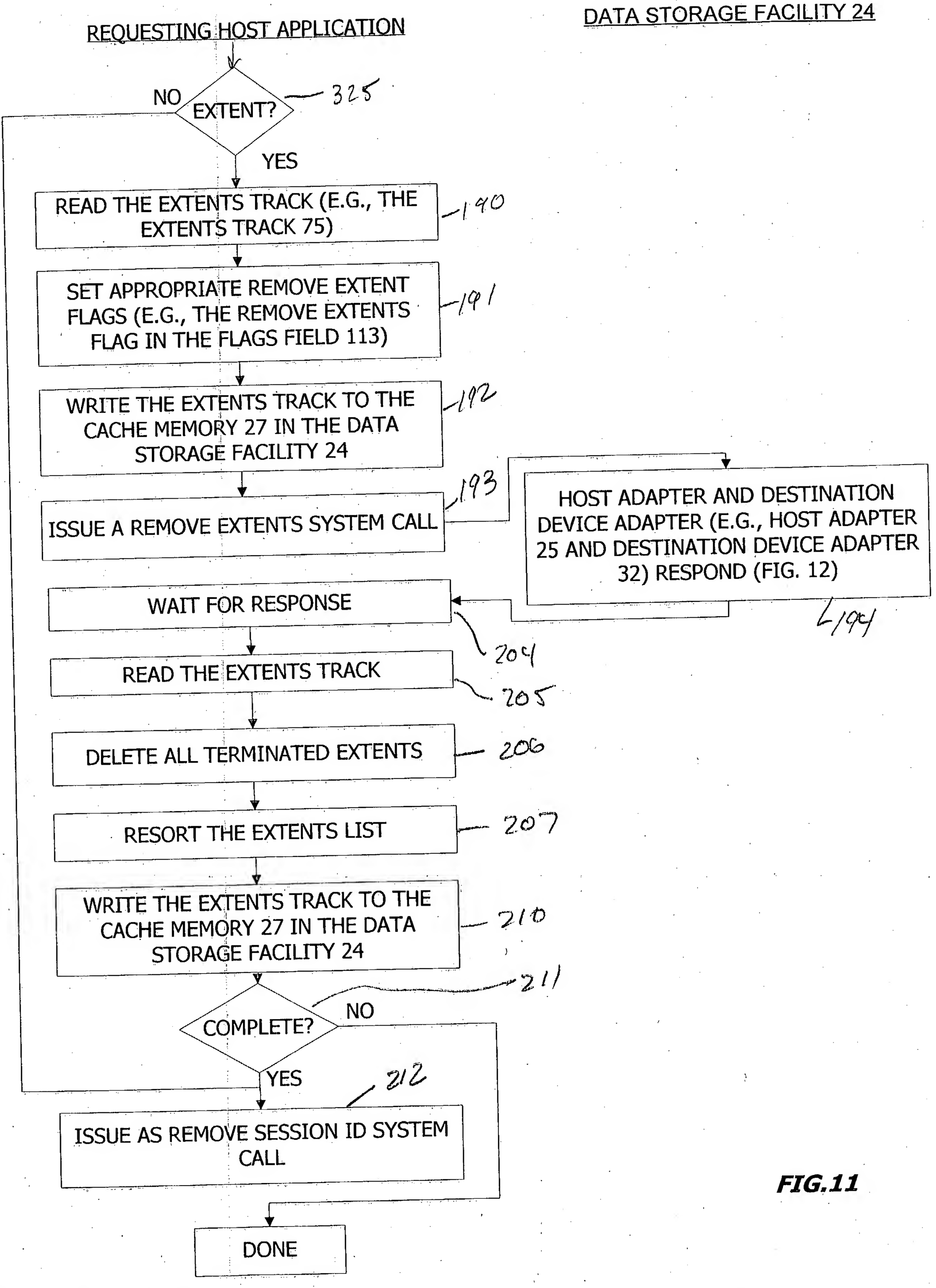
REQUESTING HOST APPLICATION
DATA STORAGE FACILITY 24
NO
EXTENT?
325
YES
READ THE EXTENTS TRACK (E.G., THE EXTENTS TRACK 75)
190
SET APPROPRIATE REMOVE EXTENT FLAGS (E.G., THE REMOVE EXTENTS FLAG IN THE FLAGS FIELD 113)
191
WRITE THE EXTENTS TRACK TO THE CACHE MEMORY 27 IN THE DATA STORAGE FACILITY 24
192
ISSUE A REMOVE EXTENTS SYSTEM CALL
193
HOST ADAPTER AND DESTINATION DEVICE ADAPTER (E.G., HOST ADAPTER 25 AND DESTINATION DEVICE ADAPTER 32) RESPOND (FIG. 12)
194
WAIT FOR RESPONSE
204
READ THE EXTENTS TRACK
205
DELETE ALL TERMINATED EXTENTS
206
RESORT THE EXTENTS LIST
207
WRITE THE EXTENTS TRACK TO THE CACHE MEMORY 27 IN THE DATA STORAGE FACILITY 24
210
COMPLETE?
211
NO
YES
212
ISSUE AS REMOVE SESSION ID SYSTEM CALL
DONE

FIG.11

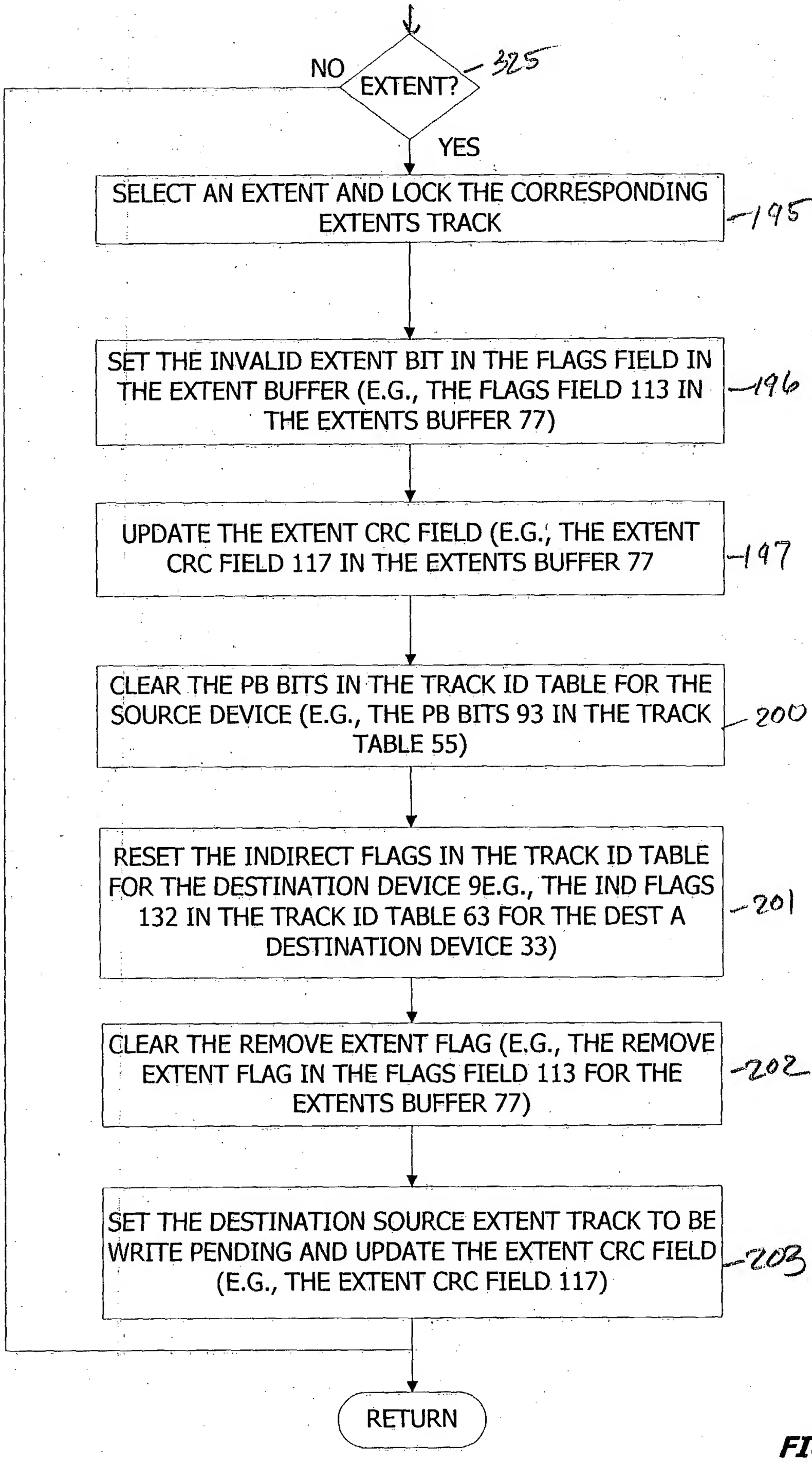
NO
EXTENT?
325
YES
SELECT AN EXTENT AND LOCK THE CORRESPONDING EXTENTS TRACK
195
SET THE INVALID EXTENT BIT IN THE FLAGS FIELD IN THE EXTENT BUFFER (E.G., THE FLAGS FIELD 113 IN THE EXTENTS BUFFER 77)
196
UPDATE THE EXTENT CRC FIELD (E.G., THE EXTENT CRC FIELD 117 IN THE EXTENTS BUFFER 77
197
CLEAR THE PB BITS IN THE TRACK ID TABLE FOR THE SOURCE DEVICE (E.G., THE PB BITS 93 IN THE TRACK TABLE 55)
200
RESET THE INDIRECT FLAGS IN THE TRACK ID TABLE FOR THE DESTINATION DEVICE 9E.G., THE IND FLAGS 132 IN THE TRACK ID TABLE 63 FOR THE DEST A DESTINATION DEVICE 33)
201
CLEAR THE REMOVE EXTENT FLAG (E.G., THE REMOVE EXTENT FLAG IN THE FLAGS FIELD 113 FOR THE EXTENTS BUFFER 77)
202
SET THE DESTINATION SOURCE EXTENT TRACK TO BE WRITE PENDING AND UPDATE THE EXTENT CRC FIELD (E.G., THE EXTENT CRC FIELD 117)
203
RETURN

FIG. 12

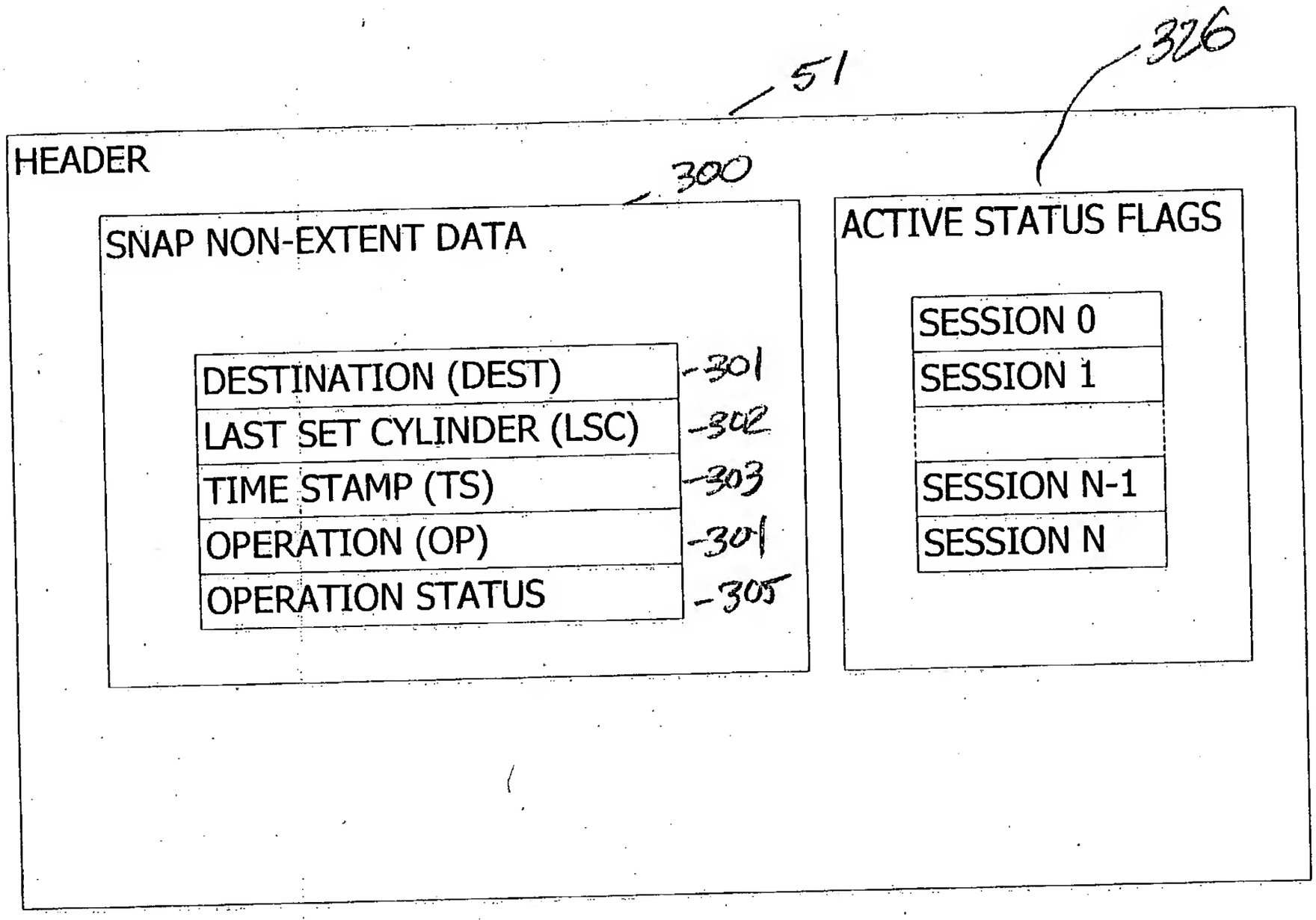
51
326
HEADER
300
SNAP NON-EXTENT DATA
DESTINATION (DEST)
LAST SET CYLINDER (LSC)
TIME STAMP (TS)
OPERATION (OP)
OPERATION STATUS
301
302
303
304
305
ACTIVE STATUS FLAGS
SESSION 0
SESSION 1
SESSION N-1
SESSION N

FIG. 13

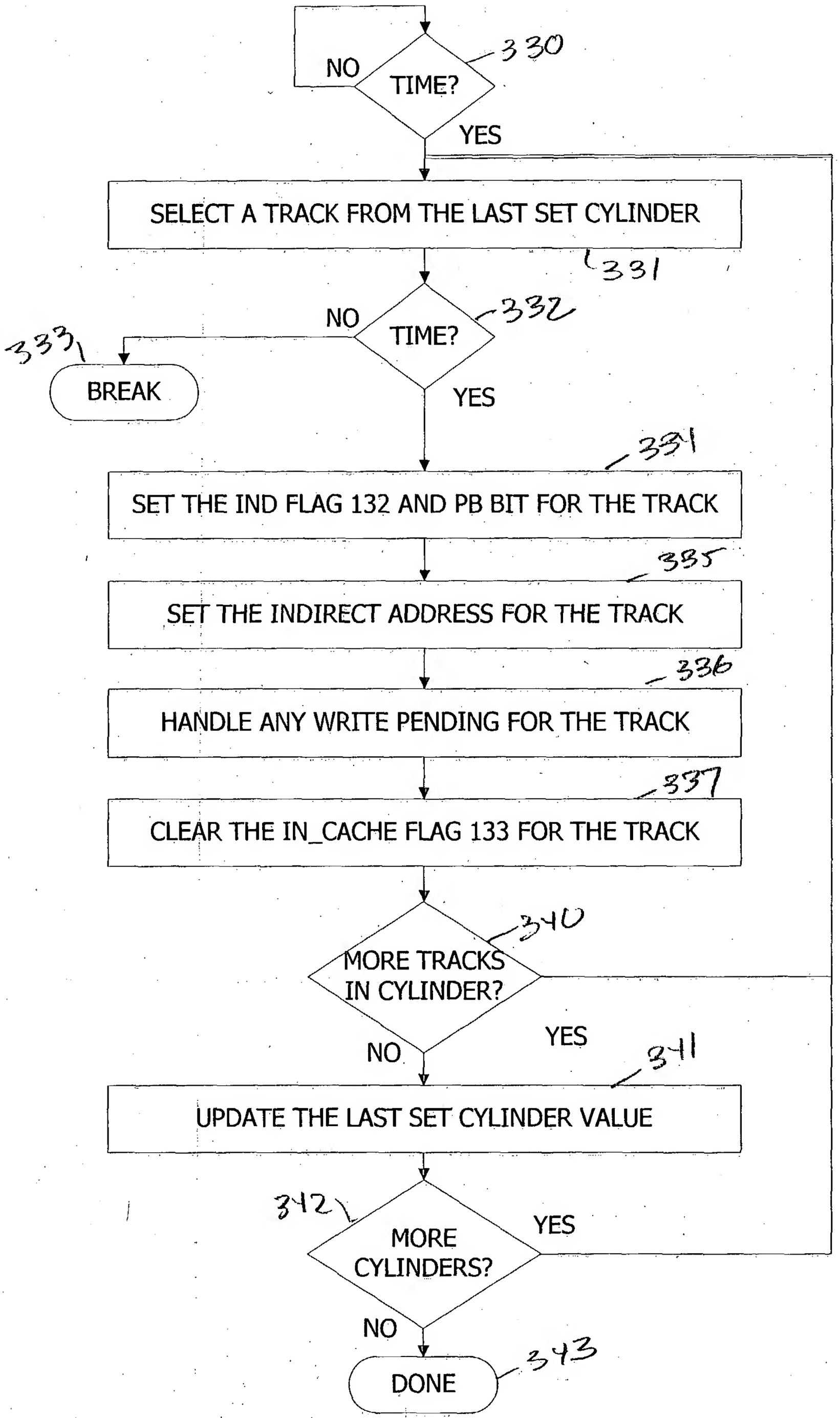
330
NO
TIME?
YES
SELECT A TRACK FROM THE LAST SET CYLINDER
331
332
NO
TIME?
333
BREAK
YES
334
SET THE IND FLAG 132 AND PB BIT FOR THE TRACK
335
SET THE INDIRECT ADDRESS FOR THE TRACK
336
HANDLE ANY WRITE PENDING FOR THE TRACK
337
CLEAR THE IN_CACHE FLAG 133 FOR THE TRACK
340
MORE TRACKS IN CYLINDER?
NO
YES
341
UPDATE THE LAST SET CYLINDER VALUE
342
MORE CYLINDERS?
YES
NO
343
DONE

FIG. 14

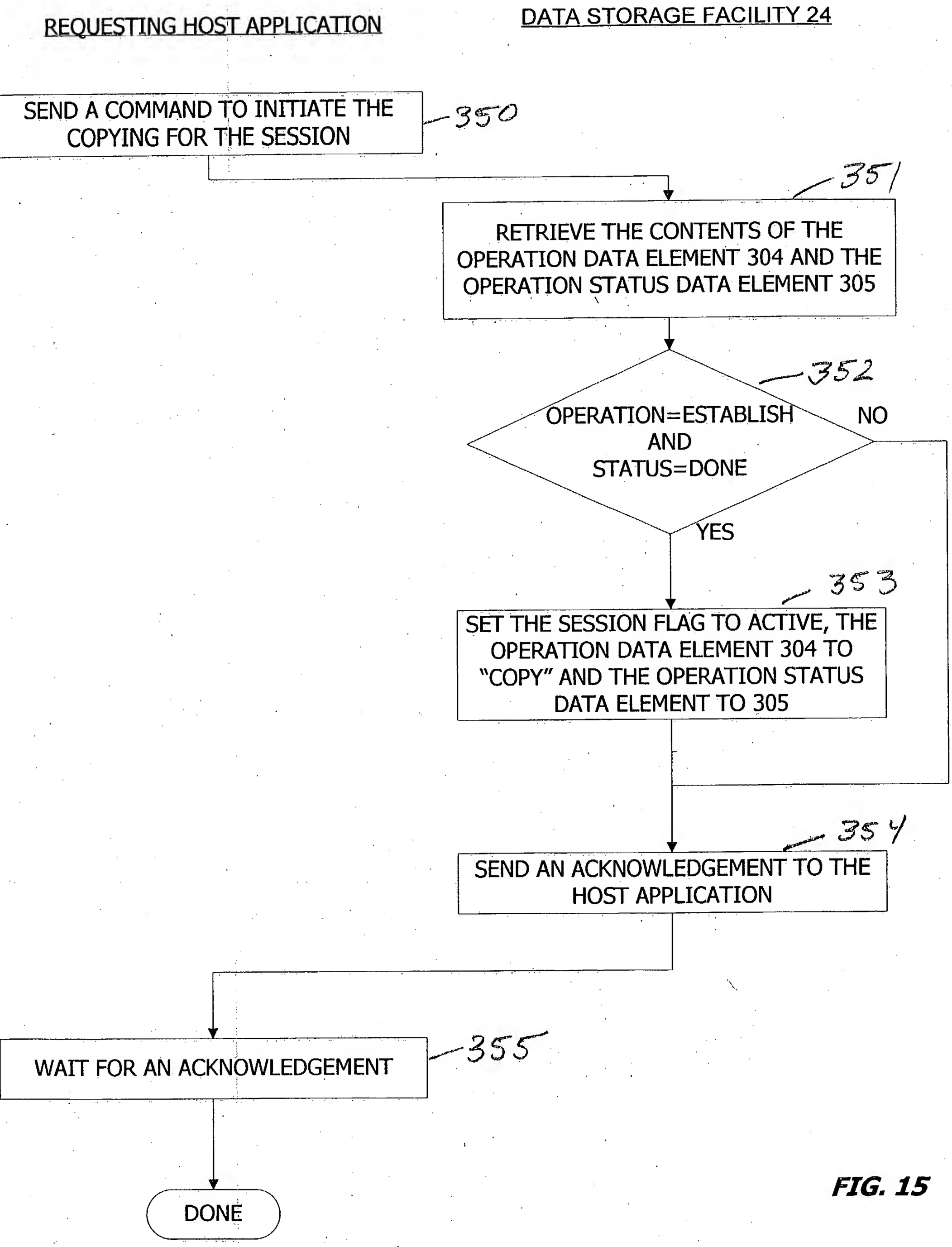
REQUESTING HOST APPLICATION
DATA STORAGE FACILITY 24
SEND A COMMAND TO INITIATE THE COPYING FOR THE SESSION
350
RETRIEVE THE CONTENTS OF THE OPERATION DATA ELEMENT 304 AND THE OPERATION STATUS DATA ELEMENT 305
351
OPERATION=ESTABLISH AND STATUS=DONE
352
NO
YES
SET THE SESSION FLAG TO ACTIVE, THE OPERATION DATA ELEMENT 304 TO "COPY" AND THE OPERATION STATUS DATA ELEMENT TO 305
353
SEND AN ACKNOWLEDGEMENT TO THE HOST APPLICATION
354
WAIT FOR AN ACKNOWLEDGEMENT
355
DONE

FIG. 15